

ENGINE COMPONENTS AND TESTS (CONT'D)

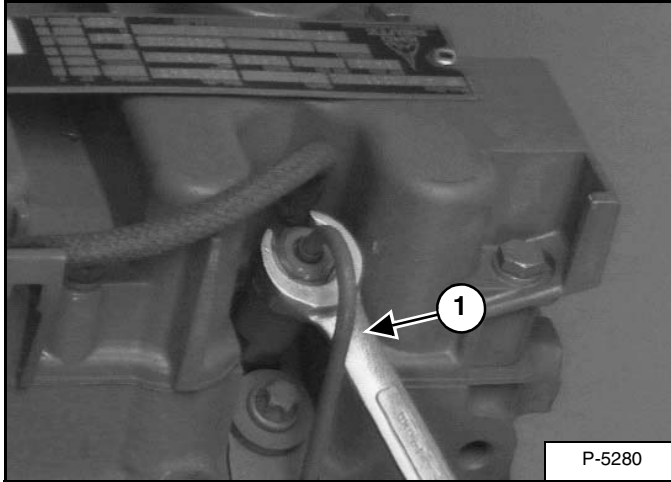
Fuel Injector Removal and Installation

IMPORTANT

Do not bend the high pressure fuel injection tubes when removing or installing them.

I-2029-0289

Figure 70-70-29



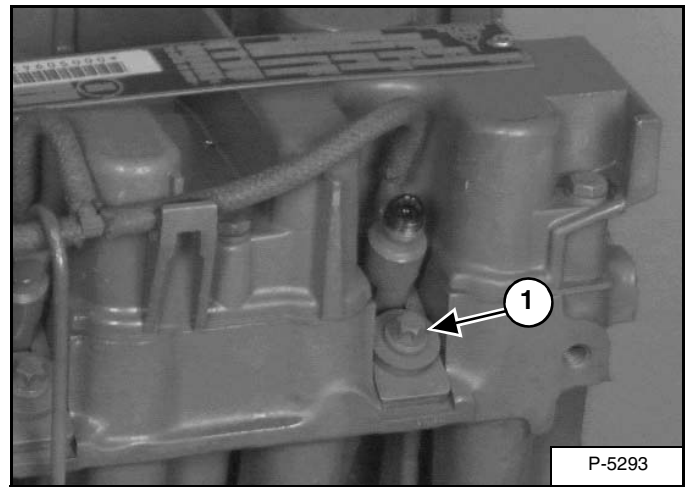
Disconnect the respective high pressure fuel line from fuel injector to be removed and fuel injection pump.

Use a flare nut wrench (Item 1) [Figure 70-70-29] to loosen the high pressure fuel line nut.

Remove the high pressure fuel line.

Installation: Tighten the fuel line nut to 10 - 12 ft.-lb. (13,5 - 16,5 N•m) torque.

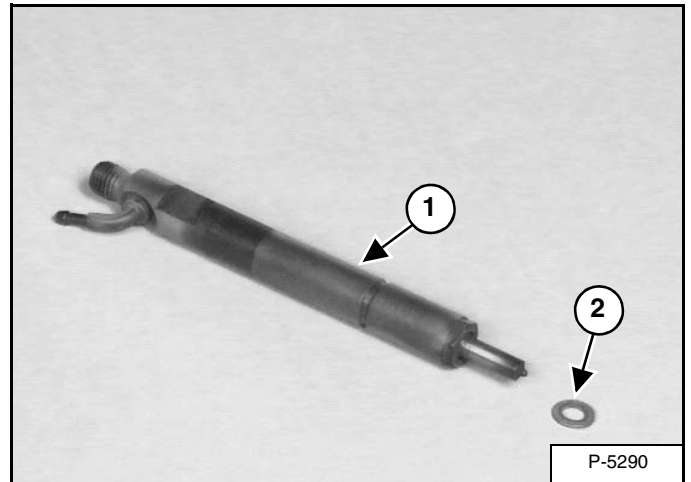
Figure 70-70-30



Remove the bolt (Item 1) [Figure 70-70-30] and holddown clamp from the fuel injector.

Installation: Tighten the bolt to 15.5 ft.-lb. (21 N•m) torque.

Figure 70-70-31



Remove the fuel injector (Item 1) [Figure 70-70-31] and washer (Item 2) [Figure 70-70-31] from the cylinder head.

ENGINE COMPONENTS AND TESTS (CONT'D)

Fuel Injector, Checking

IMPORTANT

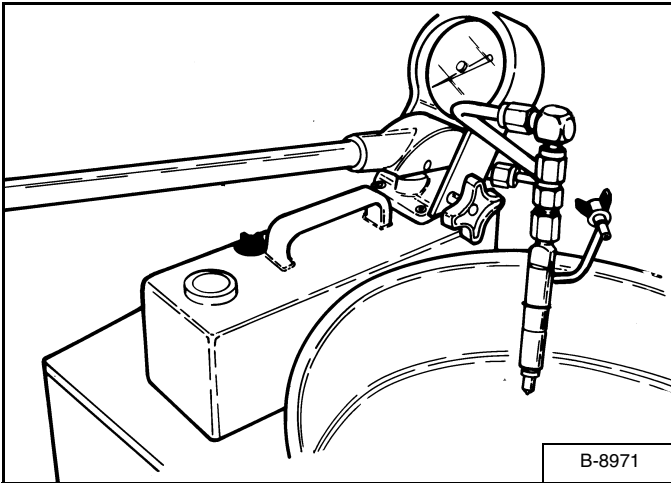
Do not disassemble or test the fuel injector nozzles unless you have the correct service and testing tools.

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The tools listed will be needed to do the following procedure:

OEM1064 - Injection Nozzle Tester
OEM1065 - Accessory Set

Figure 70-70-32



Connect the nozzle to the test pump, in a down position [Figure 70-70-32].

Injection Pressure	3045 PSI (210 bar)
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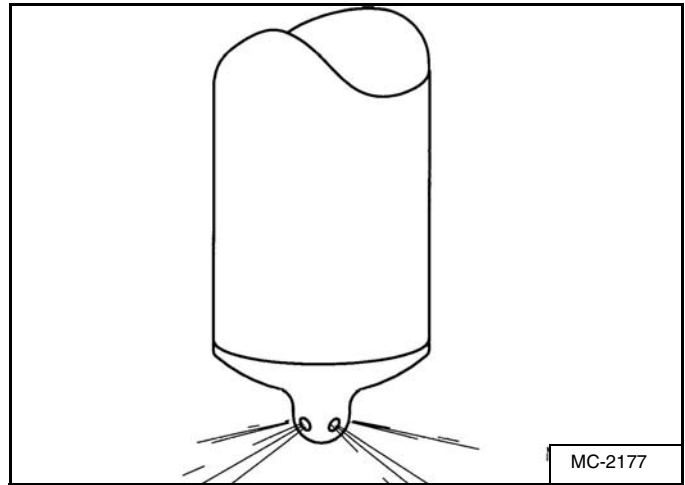
! WARNING

AVOID INJURY OR DEATH

Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

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Figure 70-70-33



Check nozzles spray pattern [Figure 70-70-33]:

The spray pattern must be uniform from all four holes of the nozzle.

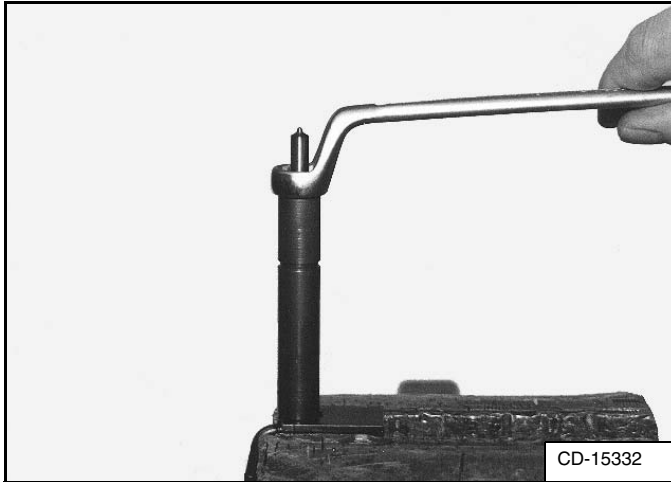
The nozzles are dirty or defective:

- If the spray pattern is not uniform.
- If fuel drips from the end of the nozzle.
- If the spray is a solid stream instead of a mist.

ENGINE COMPONENTS AND TESTS (CONT'D)

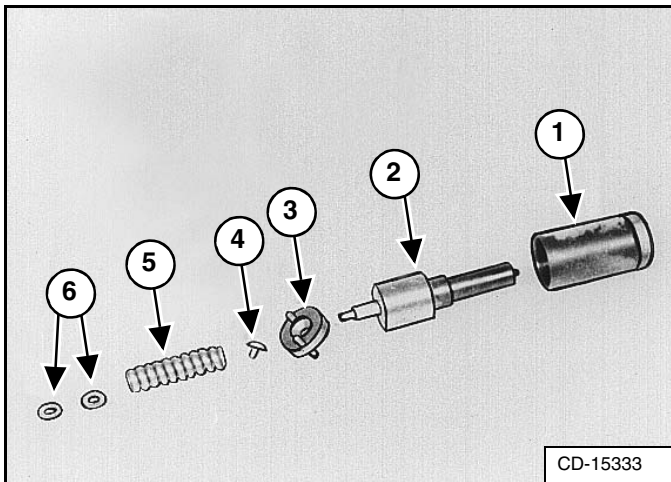
Fuel Injector Disassembly

Figure 70-70-34



Remove the nozzle cap nut [Figure 70-70-34].

Figure 70-70-35



Disassemble the parts as shown in [Figure 70-70-35].

1. Nozzle Cap Nut
2. Injector Nozzle
3. Adapter
4. Thrust Pin
5. Spring
6. Shim(s)

Wash all the parts in clean diesel fuel and blow dry using compressed air.

Figure 70-70-36



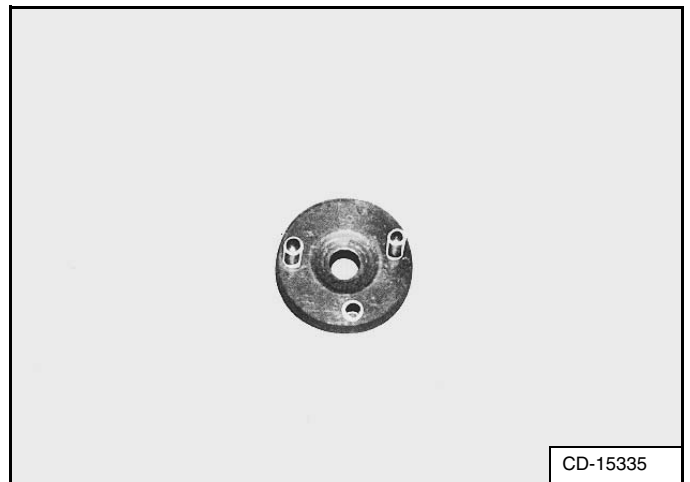
The nozzle needle and body [Figure 70-70-36] are lapped together and can not be exchanged with other nozzle parts.

DO NOT touch the nozzle needle with your fingers.

When the nozzle body is held in the upright position, the needle should by its own weight slide slowly and smoothly on its seat [Figure 70-70-36].

NOTE: If the nozzle needle does not slide smoothly, wash the injector nozzle parts again in clean diesel fuel. Blow dry with compressed air. Re-do the procedure again. Replace the injectors as needed. Wash all new injectors in clean diesel fuel before installation.

Figure 70-70-37

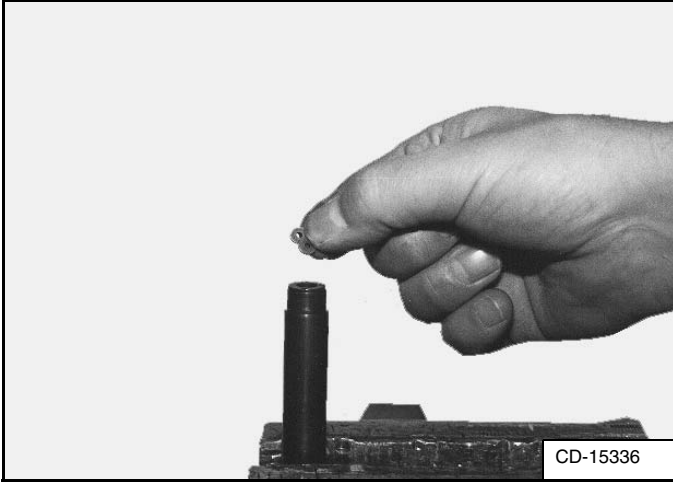


Check the seat surface of the adapter for wear. Make sure the centering pins are in place [Figure 70-70-37].

ENGINE COMPONENTS AND TESTS (CONT'D)

Fuel Injector Assembly

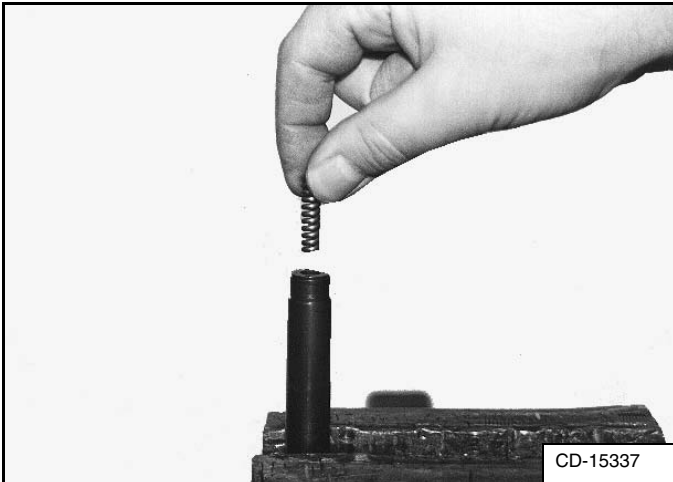
Figure 70-70-38



Install the shim(s) [Figure 70-70-38].

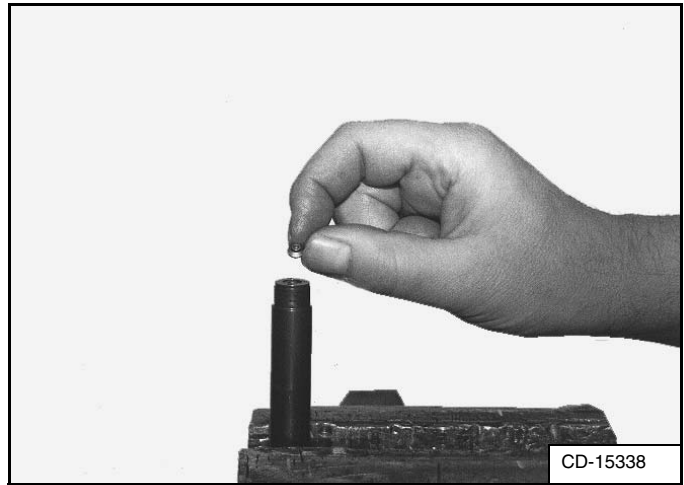
The injector opening pressure is adjusted by selecting the correct amount of shim(s). A thicker shim will increase the opening pressure at the injector nozzle.

Figure 70-70-39



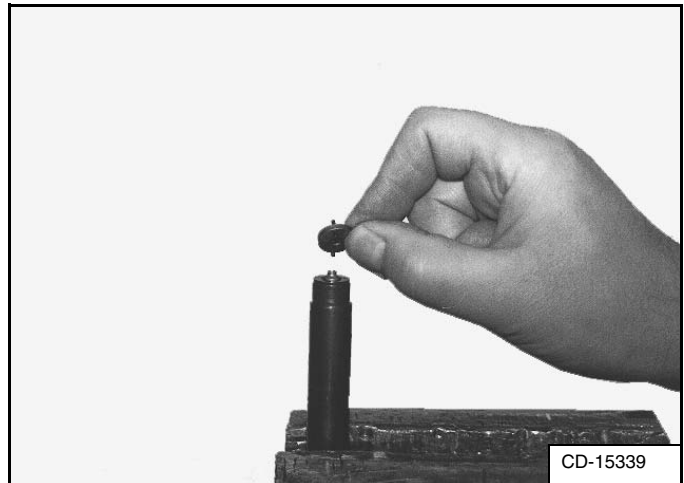
Install the compression spring [Figure 70-70-39].

Figure 70-70-40



Install the thrust pin with the centering collar facing toward the compression spring [Figure 70-70-40].

Figure 70-70-41



Install the adapter with the centering pins toward the thrust pin [Figure 70-70-41].